Rainier Commons Catch Basin Monitoring Plan for Abatement Work Performed in Phase IIb and Phase III
August 15, 2019

I. Introduction:

Rainier Commons (Rainier), in conjunction with NVL Laboratories (NVL), has prepared this *Catch Basin Monitoring Plan for Abatement Work Performed in Phase IIb and Phase III* (Plan) to ensure that interim measures to protect the storm and combined storm and sanitary sewer systems (collectively referred to as "storm sewer system") continue to perform effectively throughout the remainder of the *Rainier Commons Paint Abatement Project* (Project). Additionally, the Plan provides demonstrable compliance with Condition 6 of the EPA Risk-Based Disposal Approval (RBDA), dated December 18, 2013; which identifies requirements relative to the prevention of exposure of PCBs to the storm sewer system network.

II. Background:

Several years ago, Rainier, in conjunction with Seattle Public Utilities (SPU) and King County Wastewater Management (K/C), developed and implemented best management practices (BMPs) intended to protect storm sewer system collection points against the introduction of paint chips which may contain PCBs. Collectively, these BMPs form Rainier's Site Source Control Containment Plan, which is periodically monitored by SPU and K/C. Ongoing laboratory testing of representative catch basin contents – by both Rainier and the public utilities – continues to demonstrate the efficacy of Rainier's site source control.

As required by RBDA Condition 6, Individual Phase Work Plans (IPWP) for Phase I and IIa contained a complete inventory of all known inlets and pathways to the storm sewer systems on the Rainier campus, including roof drains, manholes, catch basins, and all other entry points to the system. This inventory was originally developed by CDM Engineering on its schematic drawing dated January 2009. Subsequent refinements to the drawing include revisions dated July 2012.

More recently, in-depth evaluations of the storm sewer system, as well as recent changes brought about by new construction to the south, are reflected on the final inventory diagram titled *Rainier Commons Inventory of Storm Sewer Inlets*. These evaluations included extensive dye testing to validate stormwater flow patterns, the use of non-hazardous smoke to confirm pathway configurations and connectivity, and visual/audible tracking of individual system components.

Based on the results of this work, we now have a complete understanding of the water flow patterns of all the exterior surfaces, knowledge of the specific intake(s) into the system where water would go for any particular surface area, and knowledge of the location of the last access point for collecting samples just prior to effluents leaving the campus. In so much as the goal of our Site Source Control Plan and the controls in place when paint abatement work occurs is to prevent the introduction of PCBs into the public storm sewer system, strategically and continuously collecting samples and testing for PCBs at specific points presented in this plan will provide the most comprehensive protection.

III. Approach:

RBDA Condition 6 includes a requirement to obtain aqueous and catch basin sediment samples adjacent to the areas undergoing abatement; both prior to, during, and after completion of abatement activities. In previous Phases (IPWP I and IIa), this requirement was met by obtaining samples from the manhole and/or catch basin that represented the nearest, downstream storm sewer system component capable of obtaining a sample.

While this methodology was helpful in demonstrating the efficacy of the individual protective measures utilized for a particular Phase, it did not provide an overall view of the campus. The vagaries of the timing of rainfall have also interfered with sampling in the time frames contemplated in the original plan, e.g. rainfall at night and on weekends, but not for extended periods during weekday working hours. The initial methodology was also developed to address an abatement strategy that contemplated a series of starts and stops between Phases.

The planned abatement strategy for the remainder of the work on campus (IPWP IIb and III) is anticipated to be performed in a continuous flow of activities. The remaining Work is comprised of a series of "Setups", with several Setups being performed concurrently. It is anticipated that - at any given time – concurrently run Setups will be in any one of four stages: Mobilization, Abatement, Verification, and Demobilization. These stages can be generally categorized into the RBDA Condition 6 definitions of before, during, and after abatement activities.

Since these concurrent Setups will be located at several different locations throughout the campus at any given time, it is imperative that the Plan address the effectiveness of protective measures applied to the storm sewer system at the campus-wide level, rather than an individual catch basin or manhole. A monthly sampling interval will increase the opportunity to capture the sampling matrix in adequate volumes.

Based on the extensive analysis and testing of the Rainier campus storm sewer system, five main Zones and their respective main points of entry to the public storm sewer systems have been identified. Also, for each of these five Zones a sampling location has been identified, representing the system access point closest to the discharge into the public systems.

Further, by graphically mapping the contributing surface water flows for each Zone, it can be determined what Zone will be immediately adjacent to any given Setup (see attached diagram titled *Rainier Commons Catch Basin Sampling Zones*). For example, Setup #1 describes abatement work to be performed on Building 12, west elevation. Consulting the Zone diagram will identify the blue Zone (sample location C/B#3) as the Zone immediately adjacent to the Setup.

The cover sheet description of each Setup (located in the Plan, section titled *Floor Plans*) will clearly identify its applicable Catch Basin Sampling Zone. See attached example of Cover Sheet for Setup #1.

IV. Sampling Frequency:

To provide a campus-wide assessment of the on-site storm sewer system, each of the five Catch Basin Sampling Zones will be tested for the presence of PCBs on a monthly basis. Monthly testing will include collecting and analyzing both aqueous and sediment samples, as available and applicable.

The current regulatory storm sewer discharge levels for Rainier authorizes 0.1 micrograms per Liter (µg/L) per Aroclor of PCBs. Therefore, the action level for PCBs in the aqueous samples will be 0.1 µg/L per Aroclor of PCBs for this sampling plan. The action level for PCBs in sediments is 1 ppm (or 1 mg/kg) per Aroclor of PCBs. Laboratory detection limits/reporting limits shall be correspondingly adequate to detect and report each of these levels.

Rainier will make best efforts to time the collection of aqueous samples so that they are collected during or immediately following rain events, as practicable. It will consult the NOAA weather forecast for the Seattle area (http://www.wrh.noaa.gov/sew/) and/or other credible weather news source to assist in planning for collection of adequate aqueous samples, in anticipation of each monthly sampling round. In the event that no significant rain events occur during the current sampling period, samples will be

collected during the course of the next rain event, without waiting for the next monthly round, wherever practicable.

Monthly sampling will commence during initial Mobilization activities for the first Setup and will continue for 12 consecutive months following the last Demobilization of the final Setup. Sampling and monitoring results from the samples collected subsequent to final Demobilization will be reported under separate cover and will not be cause for delay in the Project Final Closeout Report submittal and review/approval.

V. Sampling Locations:

The sample collection location for each Catch Basin Sample Zone is:

Sample Zone	Sample Location Identifier	Description
Purple	Catch Basin #24	C/B located at NE corner of campus access road. Marked "Stormceptor"
Green	Clean-out #1	Clean-out adjacent to NE corner of new Urban Storage, South of Bldg 15
Orange	Manhole #6	Manhole west of southern area of Bldg 14
Yellow	Manhole #28	Manhole at eastern intersection of Bldg 1 and Bldg 2
Blue	Catch Basin #3	C/B located west of Bldg 13, in main parking lot

VI. Methodology:

A Certified Industrial Hygienist (CIH) will oversee all sample collection, analysis, data interpretation and reporting involved with the Work and the IPWPs, including this Sampling Plan.

To collect aqueous samples, NVL will use a telescopic catch pole fitted with a clean polyethylene catch cup fitted to the end to collect the water sample. The sample cup is to be appropriately discarded after use. After lowering the catch cup down into the water in the catch-basin, the aqueous sample will be retrieved and then poured directly into a one-liter amber glass bottle. The bottles will then be labeled and packed in an iced cooler for transportation to the laboratory via chain-of-custody protocol.

To collect sediment samples, NVL will use the same telescopic catch pole fitted with a trowel tip to collect any sediment present at the bottom of the catch-basin. The trowel tip is to be appropriately discarded or cleaned for re-use. After scooping up sediment, the sample will be retrieved, and sediment transferred into a clean and labeled container. Sediment samples will then be transported to the laboratory via chain-of-custody protocol.

For sediment samples, composite sampling will be used where possible, with the intent to collect a representative sediment sample. The bottom of a catch basin will be divided visually into four quadrants and four separate scoops will be taken from each quadrant, withdrawn and all placed in the same container. It is recognized that there may not be any sediment in one or more of the quadrants at the bottom of a catch basin. If this is the case, then only the scoops of sediment from the remaining quadrants

that can be collected will be submitted as the sample. The container will be submitted to the laboratory as a single sample and the directions for analysis will be to homogenize the sample prior to analysis.

If any sediment scoop includes appreciable amounts of water the sediment sampling will generally follow the procedure set forth by King County in Section 3.1 at page 8 of its East Waterway Source Tracing in King County Combined Sewer System Sampling and Analysis Plan document. Overlying water collected with the sediment will be allowed to settle and then be decanted from the sample container and be returned to the storm/sewer line.

NVL will document in its records and observations that sediment was or was not present at each sampling location, during an inspection.

Due to the time and cost involved with decontaminating the sampling equipment, the nature of the sampling equipment used and to avoid the potential for any cross contamination, collection device equipment will be disposable where possible and for what is not disposable, sufficient quantity of the equipment will be available when samples are taken to have clean items that contact the sample for each sample collected (For example, enough trowels will be present for the sampling round to facilitate the use of a clean trowel for each collected sample for that sampling round. Decontamination of any sampling equipment that is not disposable and will be used for the next sampling round will be done following a general procedure and protocol, which includes decontaminating by scrubbing equipment with water containing detergent, followed by rinsing with clean water and then rinsing/wiping the surface with hexane.

VII. Media Sample Volume Requirements:

Per the analytical procedure requirements:

- Aqueous sample minimum volume: 1 Liter.
- Sediment sample minimum mass: 10 grams

VIII. Analysis:

Samples will be submitted to AIHA and Washington Dept. of Ecology accredited laboratories to be analyzed for PCB Aroclor content via EPA Method 8082.

NVL Laboratories will be the primary laboratory used for the analysis. NVL meets the requirements of this Condition. NVL Laboratories' professional laboratory accreditations and reference to QA/QC documentation can be found at: http://www.nvllabs.com/qualifications.htm.

Laboratory turnaround time will be a standard five days, unless otherwise directed by Rainier's Project Manager.

IX. Chain of Custody:

Standard Chain of Custody Procedures include:

- All samples must have a unique field sample identifier.
- Personnel will maintain control and security of samples collected to prevent loss or possible tampering.
- A chain of custody form will be used to transfer custody of samples to the laboratory.
- The chain of custody form minimally includes fields for sample identifier, parameter for analyses, sample collection date and time, sampler, and custody transfer signature area.
- Samples collected will be properly stored and relinquished to the laboratory for analysis as soon as practical

X. Quality Assurance/Quality Control (QA/QC):

QA/QC details are necessary to ensure that the resulting data are of acceptable quality, including sensitivity, to be acceptable for comparison to EPA decision criteria.

Laboratory QA/QC

NVL Laboratories standard QA/QC procedures will be applicable. The QA/QC program in place is part of NVL Laboratories' multiple professional laboratory accreditations, which include recognition by The Washington State Department of Ecology (Ecology) – Accreditation ID C797 - for several listed chemicals, including PCB (Aroclor) analysis.

NVL's practices and procedures in place to maintain Ecology Accreditation include:

- Periodic Laboratory Inspections by Ecology to monitor and accept NVL's laboratory facilities, laboratory procedures/practices and testing conditions.

- Routine involvement with the Proficiency Testing Program where samples are sent to NVL's laboratory and results are reviewed by Ecology to test the accuracy of analysis.

NVL Laboratories' QA/QC program includes the addition of surrogates, laboratory control sample (LCS) and LCS duplicate, matrix spike (MS) and MS duplicate and continuous calibration check (CCV) sample for all PCB analysis.

Any other laboratory selected for analysis of samples will be required to have similar procedures and accreditations.

Sample Collection QA/QC

Duplicate Samples: To measure QA/QC for reproducibility and representativeness of results, a duplicate sample will be collected for each aqueous and sediment laboratory submission set. (i.e. one aqueous duplicate sample and one sediment duplicate sample.) By definition, a duplicate sample is a separate sample collected under comparable conditions as the first sample. Duplicate samples are to be submitted with the other samples in the set to the same laboratory.

For each and every laboratory submission set, the selection of the separate locations to collect the duplicate aqueous and sediment samples will be from the available identified sampling locations using a random number generator.

For aqueous samples, all five sampling locations identified in Section V of this document are available.

For sediment samples, only two of the sampling locations identified in Section V of this document are available given that they are locations where sediment would likely exist. These two locations are for Sample Zone Purple and Sample Zone Blue which are catch basins whereas the other three sampling locations are sections of drainpipe where it is not anticipated that sediment would deposit and be available for collection.

To create a duplicate sample, twice the standard volume of effluent or sediment collected for a standard sample will collected, homogenized and then placed into two separate sample containers and appropriate identified as duplicate samples.

Laboratory analysis results must be within 75 to 125 percent to be acceptable.

Split Samples: To measure QA/QC for accuracy and reproducibility of results, a split sample will be collected for each aqueous and sediment laboratory submission set. (i.e. one aqueous split sample and one sediment split sample.) By definition, a split sample is created by first collecting the sample in a single container, homogenizing the sample in the container, then dividing the sample in two by placing half of the sample in a separate container. Split samples are to be submitted to separate laboratories. One of the split samples is part of the sample set of collected samples sent to a laboratory.

For each and every laboratory submission set, the selection of the separate locations to collect the split aqueous and sediment samples will be from the available identified sampling locations using a random number generator.

For aqueous samples, all five sampling locations identified in Section V of this document are available.

For sediment samples, only two of the sampling locations identified in Section V of this document are available given that they are locations where sediment would likely exist. These two locations are for Sample Zone Purple and Sample Zone Blue which are catch basins whereas the other three sampling locations are sections of drain pipe where it is not anticipated that sediment would deposit and be available for collection.

To create a split sample, twice the standard volume of effluent or sediment collected for a standard sample will collected, homogenized and then placed into two separate sample containers and appropriate identified as split samples.

Laboratory analysis results must be within 75 to 125 percent to be acceptable.

All QA/QC samples will be managed under the chain-of-custody control as referenced above.

Maximum Concentration Level (MCL):

Laboratory results from analysis of samples will have a maximum allowable concentration level of 0.1 µg/L PCBs in aqueous samples and 1 mg/kg PCBs in sediment samples. Reporting Limits shall correspond to these levels.

XI. Contingency Plan:

The presence of PCBs greater than (>) 0.1 µg/L in aqueous samples or greater than (>) 1 mg/kg in sediment samples shall trigger an immediate evaluation of any containment structures that are or recently have been in place along with current source control measures to address any deficiencies and implement appropriate additional interventions, corrections or improvements where applicable. Any results exceeding the defined MCL will be immediately reported to the EPA by Rainier's Project Management.

XII. Reporting:

Laboratory results will be reviewed by NVL's CIH for compliance with the defined MCL maximums and provided by NVL to Rainier for inclusion with Project documents. Upon conclusion of all Project abatement activities, NVL will prepare a final Catch Basin Sampling Report which will include a description of the sampling locations and sampling conditions as well as site photos. The results of the laboratory analysis will be shown in a data table. Any sample with a detection result above the MCL will be shown in bold in the table. Laboratory analysis reports and a site map showing the designated sample collection locations will also be included as attachments to the report.

Rainier will include the final Catch Basin Sampling Report as an attachment to the Project Final Closeout Report.